

**REMARKS**

***Amendment summary***

Claims 6 and 21 are amended to recite that the upper and lower magnetic field generating mechanisms are moved vertically in opposite directions toward a horizontal level at which the substrate is positioned to decrease the distance therebetween and are moved vertically in opposite directions away from said horizontal level to increase the distance therebetween. Support for this amendment may be found at least, e.g., at page 18, lines 14-18 and Figure 12 of the present specification.

No new matter is added by this Amendment, and Applicants respectfully submit that entry of this Amendment is proper.

***Status of the claims***

Claims 6 and 21 have been rejected under 35 U.S.C. § 103 (a) as allegedly being unpatentable over Ito et al. (JP ‘912) or Morimoto (JP ‘095) in view of Nishijima et al. (JP ‘187) (hereinafter “Ito,” “Morimoto,” and “Nishijima,” respectively). In addition, claim 20 has been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ito or Morimoto in view of Arami et al. (U.S. Patent No. 6,014,943) (hereinafter “Arami”).

***Response to rejections based on Ito or Morimoto***

All of the pending rejections mentioned above are based on the teachings of Ito or Morimoto. However, Applicants respectfully traverse the rejections on the basis that (1) a person having ordinary skill in the art would not have combined the references in the manner set

forth in the Office Action because the magnetic field in Nishijima is quite different from the magnetic fields disclosed in Ito and Morimoto; and (2) Nishijima fails to disclose or suggest the presently recited movement of the upper and lower magnetic field generating mechanisms.

As noted above, the present claims recite that the upper and lower magnetic field generating mechanisms are moved vertically in opposite directions toward a horizontal level at which the substrate is positioned to decrease the distance therebetween and are moved vertically in opposite directions away from said horizontal level to increase the distance therebetween.

Applicants first respectfully traverse on the basis that a person having ordinary skill in the art would not have combined the references in the manner set forth in the Office Action because the magnetic field in Nishijima is quite different from the magnetic fields disclosed in Ito and Morimoto. Ito and Morimoto both disclose a magnetic field generator comprising a plurality of magnetic segments provided on the outer side of a process chamber for producing a multi-pole magnetic field in the chamber. The multi-pole magnetic field has magnetic lines of force substantially in parallel with a plane normal to the center axis of the apparatus (or horizontal plane). This is similar to the magnetic field shown in Figures 2-4 of the present specification.

On the other hand, Nishijima discloses a spattering apparatus comprising an upper permanent magnet **21** and a lower permanent magnet **31**, each of which takes a circular ring configuration (see Paragraph Nos. [0015]-[0016]) and is provided so as to surround the corresponding electrode **16** (or **17**) and is movable independently vertically relative to the other magnet. A person having ordinary skill in the art would understand that the magnets **21** and **31** generate a cylindrically shaped magnetic field therebetween in order to confine plasma **44**.

Nishijima discloses in Paragraph No. [0034] that when the upper and lower ring-shaped magnets **21** and **31** are moved in the direction of approaching each other to change the flux density of the cylindrical magnetic field, the plasma **44** is pulled radially outwardly with the result of enhancing plasma uniformity.

Given the above teachings, a person having ordinary skill in the art would not have a reason to alter the teachings of Ito or Morimoto because the magnetic field Nishijima is quite different from the magnetic field disclosed by Ito or Morimoto.

Applicant also respectfully traverses on the basis that Nishijima fails to disclose or suggest the presently recited movement of the upper and lower magnetic field generating mechanisms. The presently claimed invention involves upper and lower magnetic field generating mechanisms which are vertically moved to control the intensity of the multi-pole magnetic field in the vacuum chamber to a desired range (see, for example, page 11, lines 3-9, Figures 2, 3(a)-3(b) and 12 of the present specification), thereby achieving desired plasma confinement. Nishijima fails to disclose or suggest the movement of the upper and lower magnetic field generating mechanisms as recited in claims 6 and 21.

In view of the above, Applicants respectfully submit that the cited references do not render the presently claimed invention obvious, and respectfully request the reconsideration and withdrawal of these § 103 rejections.

### ***Conclusion***

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

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Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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